

Radio Test Report

Report No.: STS2403065H01

Issued for

HAMATON AUTOMOTIVE TECHNOLOGY CO. ,LTD

12 East Zhenxing Road, Linping, Yuhang, Hangzhou, China

Product Name: Heavy duty sensor

Brand Name: Hamaton

Model Name: 0202095

Series Model(s): N/A

FCC ID: 2AFH70202095

Test Standards: FCC 47CFR §2.1091

The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Shenzhen STS Test Services Co., Ltd.



TEST REPORT

Applicant's Name.....: HAMATON AUTOMOTIVE TECHNOLOGY CO. ,LTD
Address: 12 East Zhenxing Road, Linping, Yuhang, Hangzhou, China
Manufacturer's Name.....: HAMATON AUTOMOTIVE TECHNOLOGY CO. ,LTD
Address: 12 East Zhenxing Road, Linping, Yuhang, Hangzhou, China

Product Description

Product Name.....: Heavy duty sensor
Brand: Hamaton
Model Number: 0202095
Series Model(s).....: N/A

Standards.....: FCC 47CFR §2.1091
447498 D04 Interim General RF Exposure Guidance v01

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Date of Test:
Date of receipt of test item.....: 12 Mar. 2024
Date (s) of performance of tests.....: 12 Mar. 2024 ~ 20 Mar. 2024
Date of Issue.....: 20 Mar. 2024
Test Result.....: Pass

Testing Engineer : [Signature]
(Aaron Bu)

Technical Manager : [Signature]
(Chris Chen)

Authorized Signatory : [Signature]
(Bovey Yang)





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Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	20 Mar. 2024	STS2403065H01	ALL	Initial Issue



1. GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF THE EUT

Product Name	Heavy duty sensor	
Brand	Hamaton	
Model Number	0202095	
Series Model(s)	N/A	
Model Difference	N/A	
Product Description	The EUT is Heavy duty sensor	
	Operation Frequency:	433.92MHz
	Modulation Type:	ASK, FSK
	Antenna gain:	0dBi
	Antenna Designation:	Metal
Rating	Input :DC 3V	
Battery	Rated Voltage: 3.0V Charge Limit Voltage: N/A Capacity: 2450 MAH	
Hardware Version	V1.0	
Software Version	V08	



1.2 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD

Add. : 101, Building B, Zhuoke Science Park, No.190 Chongqing Road, ZhanChengShequ, Fuhai Sub-District, Bao'an District, Shenzhen, Guang Dong, China

FCC test Firm Registration Number: 625569

IC test Firm Registration Number: 12108A

A2LA Certificate No.: 4338.01



2. FCC 47CFR §2.1091 REQUIREMENT

2.1 Test Standards

The limit for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed. The gain of the antennas used in the product is extracted from the Antenna data sheets provided and also the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.

Although the Friis Transmission formula is far field assumption, the calculated result of that is an over-prediction for near field power density. It is taken as worst case to specify the safety range.

2.2 LIMIT

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of the human exposure to radio-frequency (RF) radiation as specified in 1.1307 (b)

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)
Limits for Occupational / controlled Exposures			
300 - 1500	--	--	F/300
1500 – 100000	--	--	5.0
Limits for General population / Uncontrolled Exposure			
300 - 1500	--	--	F/1500
1500 – 100000	--	--	1.0

F= Frequency in MHz

Friss Formula

Friss Transmission Formula: $Pd = (Pout * G) / (4*pi*r^2)$

Where

Pd = power density in mW/cm²

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = Distance between observation point and the center of radiator in cm

If we know the maximum gain of the antenna and the total output power to the antenna, through calculation, we will know MPE value at distance 20cm.



2.3 TEST RESULT

Turn up

Mode	Modulation	Detector	Turn up Power
433.92MHz	ASK	PK	-21±1dBm
433.92MHz	FSK	PK	-20±1dBm

Protocol	Modulation	Fre. (GHz)	Separation distance (cm)	EIRP (dBm)	EIRP (W)	Limit (W)	Ratio	Result
433.92MHz	ASK	0.43392	20	-20	0.00001	0.2222	0.00005	Pass
433.92MHz	FSK	0.43392	20	-19	0.00001	0.2222	0.00006	Pass

Note: 1. The Maximum power is less than the limit, complies with the exemption requirements.

2. ERP=EIRP-2.15

3. ASK: Calculated formula: $EIRP(dBm)=73.4(dBuV/m)-95.2$

FSK: Calculated formula: $EIRP(dBm)=74.41(dBuV/m)-95.2$

*****END OF THE REPORT*****